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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ODOM, CURTIS B

ART UNIT PAPER NUMBER

2634

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/496,793

Applicant(s)

JABBAR ET AL.

Examiner

Curtis B. Odom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-17 and 19-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2, 7, 8, 10-17, 21-26 and 28-31 is/are allowed.
- 6) ☒ Claim(s) 3-6, 19, 20, and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: It is suggested that all references to “PLL” or “phase locked loop” be deleted from the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 3-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claims 3-6, claim 3 recites the limitation “applying the phase error directly to the ADC to modify the sampling time of the ADC”. However, after reviewing the specification, particularly Fig. 7 and 11B and page 21, lines 9-19, it is the understanding of the examiner that the phase error is not directly

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applied to the ADC to modify the sampling time. The phase error is applied to a loop filter (Fig. 7 and 11B, block 258) to create a timing recovery output signal that is then applied to the ADC.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aslanis et al. (previously cited in Office Action 4/22/2003).

Regarding claim 27, Aslanis et al. discloses system for timing recovery at the receiver in a DMT communications system (Fig. 1) comprising:

means for receiving (Fig. 1, block 12, column 3, lines 60-66, column 5, lines 15-16 and 56-60 and column 6, lines 3-12) a pilot tone generated and transmitted by an associated far-end transmission unit;

means for converting (Fig. 1, block 32, column 5, lines 15-19) the received pilot tone along with other received signals from an analog to a digital signals;

means for detecting (Fig. 1, block 50, column 6, lines 19-27) a phase error on the received pilot tone and a phase reference signal;

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means for applying the phase error to a timing recovery circuit (Fig. 1, block 52, column 6, lines 13-19) to generate an output signal (analog control voltage) responsive to when a cyclic prefix is not present in the digital signal, wherein the cyclic prefix has been removed (column 5, lines 23-27); and

means for using (Fig. 1, block 46, column 6, lines 13-19) the phase error to modify the ADC timing.

Aslanis et al. does not disclose the phase reference signal is a local oscillator signal.

However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the local oscillator of the claimed invention produces a reference signal for comparison with the pilot tone to produce a phase error signal (pg. 21, line 3-7, instant specification) that the phase reference signal produced from the pilot tone phase reference block (Fig. 1, block 56, column 6, lines 19-27) is functionally equivalent to the reference signal of the claimed invention. The reference signal of Aslanis et al. must also comprise of oscillations in order to determine a pilot tone phase error. Thus, the phase reference block of Aslanis et al. performs the function of producing a local oscillating signal for use with a received pilot tone to produce a phase error. Thus, claim 27 does not constitute patentability.

6. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aslanis et al. (previously cited in Office Action 4/22/2003) in view of Pax et al. (U. S. Patent No. 5, 982, 237).

Regarding claim 19, Aslanis et al. discloses a system for timing recovery at the receiver in a DMT communications system (Fig. 1) comprising:

an ADC (Fig. 1, block 32, column 5, lines 15-19);

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a phase comparator in communication with the ADC for determining phase offset on a pilot tone I, a received signal segment (Fig. 1, block 50, column 6, lines 23-27); and

a timing recovery circuit (Fig. 1, blocks 46 and 52, column 5, lines 13-27) in communication with the phase comparator configured to compensate for the phase offset and to apply a control signal to the ADC, wherein the received signal samples are synchronized for further processing at a rate compatible with that of a source transmission.

Aslanis et al. does not disclose the phase comparator is a state machine. However, Pax et al. discloses a state machine detecting a phase offset between two signals (Fig. 1, block 710, column 3, lines 38-44 and column 6, lines 8-61). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since a state machine can also be used for phase detection that it could have been implemented in place of the phase comparator of Aslanis et al. to perform phase detection as taught by Pax et al. Implementing a state machine for phase detection would not change the functionality of the device described by Aslanis et al. Thus, using a state machine used for phase detection is deemed a design choice and does not constitute patentability.

Allowable Subject Matter

7. Claims 1, 2, 7, 8, 10, 13-17, 21-24, and 29-31 are allowable over prior art because related references do not disclose generating signal segments REVERB and SEGUE using an initial pattern that minimizes pilot tone phase offsets and a symbol synchronizer for zeroing out a signal stream from an input of a timing recovery circuit when a cyclic prefix is present in the signal

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stream. Claims 11, 12, 25, 26, and 28 are allowable over prior art references because related references do not disclose removing the cyclic prefix from a signal and detecting an average pilot phase error using a DFT, and applying the average pilot phase error to the input of a timing recovery circuit to create a frequency correction signal.


Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
June 24, 2005



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